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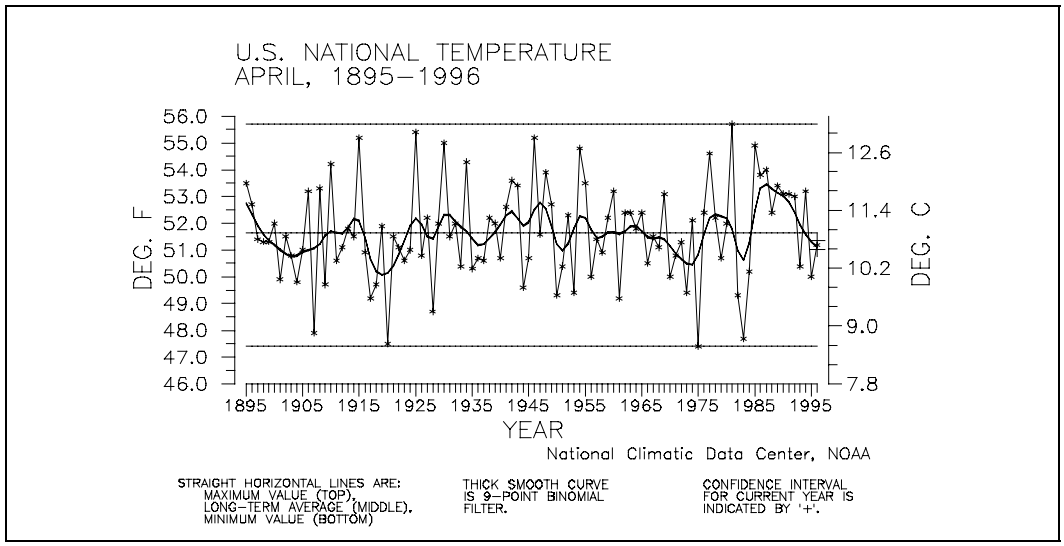
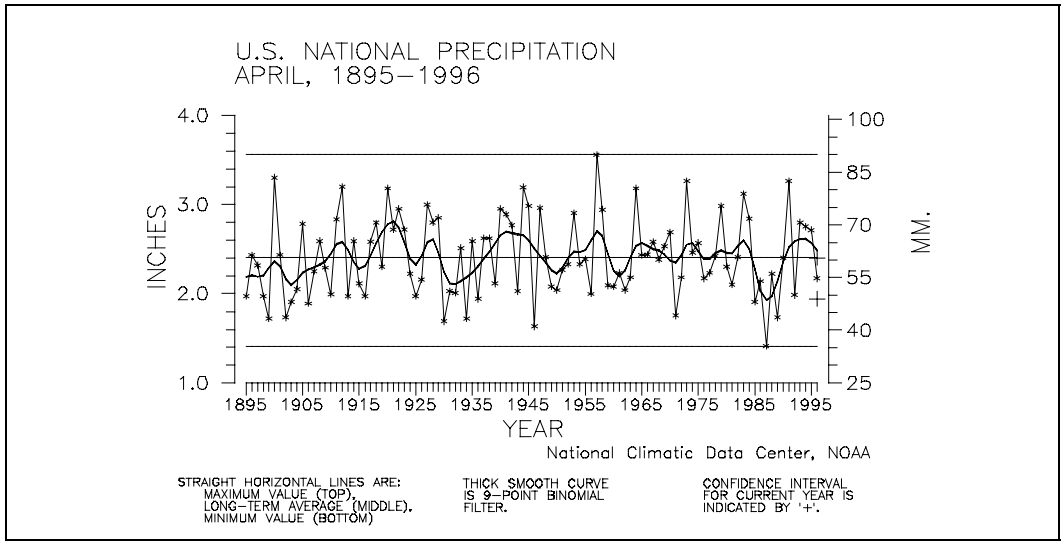
CLIMATE VARIATIONS BULLETIN





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This CLIMATE VARIATIONS BULLETIN (CVB) is a preliminary report that puts current monthly climate anomalies into historical perspective using climate databases archived at the National Climatic Data Center (NCDC). It is issued on a monthly basis. Supplemental sections are included which address seasonal and annual perspectives, when appropriate.

Current data are based on preliminary reports from First and Second Order airport stations obtained from the National Weather Service (NWS) Climate Analysis Center, and preliminary tornado statistics obtained from the NWS National Severe Storms Forecast Center. THE CURRENT DATA SHOULD BE USED WITH CAUTION. These preliminary data are useful for estimating how current anomalies compare to the historical record, however the actual values and rankings for the current year will change as the final data arrive at NCDC and are processed.

The following NCDC datasets are used for the historical data: the climate division drought database (TD-9640), the hurricane datasets (TD-9636 and TD-9697), the tornado dataset (STORM DATA), and the monthly station dataset (LCD supplemental files). It should be noted that the climate division drought database consists of monthly data for 344 climate divisions in the contiguous United States. These divisional values are calculated from the 6000+ station Cooperative Observer network.

The narrative, tables, and graphs in the CVB are also available via automated facsimile. The previous month's summary can be obtained after the tenth of the month by dialing 704-271-4570 and selecting the appropriate menu codes. A touch-tone fax machine is required.

If you have access to the Internet, copies of the CVB are available via both the NCDC's World Wide Web (WWW) server and the NCDC's anonymous FTP server.

NCDC's WWW server
URL for the CVB: http://www.ncdc.noaa.gov/publications/cvb/cvb.html

NCDC's anonymous FTP server
Machine: ftp.ncdc.noaa.gov
Directory: /pub/data/cvb

If you are a climate researcher and would like to order copies of the historical datasets used to make graphs of the type in this report, call 704-271-4994 or fax a letter to 704-271-4876 or mail a letter to the address given below, ATTN: Research User Services.

All other questions or requests for data should be made by calling 704-271-4800 or sending a fax to 704-271-4876 or by writing to:

National Climatic Data Center, NOAA
Federal Building
151 Patton Avenue, Room 120
Asheville, NC 28801-5001

If you use any of the information from this CVB, please identify "National Climatic Data Center, NOAA" as the source.

UNITED STATES APRIL CLIMATE IN HISTORICAL PERSPECTIVE

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Asheville, NC 28801 USA

Preliminary data for April 1996 indicate that temperature averaged across the contiguous United States was below the long-term mean (see Figure 1). April 1996, with an averaged temperature of 51.2° (F), ranked as the 43rd coolest April since national records began in 1895. The 1996 value is based on preliminary data, which has been shown to be within 0.17°F (0.09°C) of the final data over a 7-year period. This confidence interval is indicated in the figure by '+'. The darker smooth curve is a nine-point binomial filter that averages out the year-to-year fluctuations and shows the longer-term variations. About three percent of the country averaged much warmer than normal while nearly eleven percent of the country averaged much cooler than normal for April 1996.

With an areally-averaged national precipitation value of 2.17 inches, April 1996 was the 35th driest April on record. The preliminary value for precipitation is estimated to be accurate to within 0.23 inches (5.84 millimeters) and the confidence interval is plotted in Figure 2 as a '+'. Nearly a fourth of the country experienced much drier than normal conditions while about a tenth was wetter than normal.

Historical precipitation is shown in a different way in Figure 3. The April precipitation for each climate division in the contiguous U.S. was first standardized using the gamma distribution over the 1931-90 period. These gamma-standardized values were then weighted by area and averaged to determine a national standardized precipitation value. These national weighted values were then normalized over their period of record. Negative values are drier and positive values are wetter than the mean. This index gives a more accurate indication of how precipitation across the country compares to the local normal (60-year average) climate. The preliminary national standardized precipitation ranked April 1996 as the seventh driest such month on record. This standardized z-score is estimated to be accurate to within 0.156 index units and the confidence interval is plotted in Figure 3 as an 'X'.

National averaged temperature for the four-month period, January-April 1996, is shown in Figure 4. Temperature for the four-month period was only slightly below the long-term mean ranking as the 43rd coolest such period since 1895.

In order to show more of a historical perspective, the precipitation and temperature rankings for the periods November 1995-April 1996 and May 1995-April 1996, the April 1996 temperature rankings and categorical precipitation standings for the nine climatically homogeneous regions, as well as the national rankings, are listed in Table 1.

The regional rankings for the month of April indicate that temperatures were much cooler than normal from the Great Lakes through the Southeast and warmer than normal for the Southwest, and West regions. April 1996 was the tenth coolest such month since 1895 for the East-North Central region (Figure 5) and the 22nd coolest April for the Central and Southeast regions. April 1996 made for two consecutive such months of substantially below normal temperatures for the East-North Central region. At the other extreme, it was the 31st warmest April for the Southwest region and the 25th warmest April on record for the West (Figure 6). The warmth noted during April for the western third of the country is also noted in the six-month and twelve-month periods. The six-month period, November through April, was the third warmest on record for the West region and the seventh warmest for the Southwest region. These regions rank seventh warmest and 11th warmest, respectively, for the twelve-month period. The Northwest region had corresponding ranks less warm than these.

Four of the nine climatically homogeneous regions--stretching from the Southwest to the Great Lakes--were ranked within the dry-third of the historical distribution for April 1996. The Southeast and West regions ranked within the middle-third while the remaining three regions ranked within the wet-third of the distribution.

Figure 7A shows, in illustrative map form, the April 1996 temperature rankings for the 48 contiguous states. Two states, Michigan and Minnesota, were within the top-ten cool while an additional 17 states ranked within the cool third of the distribution. Only Arizona ranked within the top-ten warm portion of the distribution and seven other states (CA, NV, NM, OR, RI, WA, & UT) were within the warm third of the distribution.

April 1996 state categorical ranks for precipitation are shown in Figure 7B. Eighteen states ranked within the dry-third of the historical distribution while seventeen other states ranked within the wet third. ***(It should also be noted that these April state categorical precipitation ranks are preliminary and should be used with considerable caution due to the high variability of precipitation on a small space and time scale.)***

Long-term drought coverage in the United States during April increased while the area of the country experiencing severe to extreme wetness decreased slightly. Nationally, long-term drought conditions (as defined by the Palmer Drought Index) for April 1996 increased to 14.4% of the country while the percent coverage of severe to extreme wet area fell to about an eighth of the country (Figure 8). Table 2 lists statistics for selected river basins for the 1995-1996 Hydrologic Year. The core wet areas included the northern Great Plains, upper Mississippi Valley, upper Great Lakes region, portions of the northern Rockies and northern High Plains, portions of the interior Northwest and most of Florida. The Palmer dry areas included the Southwest, southern California, southern Nevada, southern Rockies, Utah, and portions of the lower Mississippi valley and lower Great Plains.

Table 3 shows extremes, 1961-90 normals, and the April 1996 values for both precipitation and temperature for the nine regions and the contiguous U.S.

According to preliminary data from the National Weather Service's National Severe Storms Forecast Center, there were 180 tornadoes across the contiguous United States in April 1996 (Figure 9). The 1953-1995 average tornado count for April is 108. Extremes for April include a minimum of 20 tornadoes in 1987 and a maximum of 269 in 1974. For the year-to-date, 302 tornadoes have been documented. The 1953-1995 average tornado count for the four-month period is 195. Extremes for the year-to-date are a maximum of 405 in 1991 and a minimum of 83 in 1987. It should be noted that the preliminary tornado count is generally higher than the final count and that observations have generally improved with time.

TABLE 1. PRECIPITATION AND TEMPERATURE RANKS, BASED ON THE PERIOD 1895-1996. 1 = DRIEST/COLDEST, 102 = WARMEST FOR APRIL 1996 TEMPERATURES, 101 = WETTEST/WARMEST FOR NOV 1995-APR 1996, 101 = WETTEST/WARMEST FOR MAY 1995-APR 1996. PRESENT MONTH PRECIPITATION EXPRESSED CATEGORICALLY: WET = WET 1/3 OF THE HISTORICAL DISTRIBUTION, MID = WITHIN THE MIDDLE 1/3 OF THE DISTRIBUTION, DRY = DRY 1/3 OF THE HISTORICAL DISTRIBUTION.

REGION	APR 1996	NOV 1995-APR 1996	MAY 1995-APR 1996
PRECIPITATION:			
NORTHEAST	WET	67	59
EAST NORTH CENTRAL	DRY	31	56
CENTRAL	WET	32	60
SOUTHEAST	MID	42	80
WEST NORTH CENTRAL	DRY	5	83
SOUTH	DRY	5	18
SOUTHWEST	DRY	2	6
NORTHWEST	WET	90	97
WEST	MID	38	45
NATIONAL	MID	10	47
TEMPERATURE:			
NORTHEAST	46	22	38
EAST NORTH CENTRAL	10	9	16
CENTRAL	22	16	19
SOUTHEAST	22	6	14
WEST NORTH CENTRAL	46	30	26
SOUTH	47	44	32
SOUTHWEST	72	96	92
NORTHWEST	66	88	80
WEST	78	100	96
NATIONAL	43	39	43

TABLE 2.
STATISTICS FOR SELECTED RIVER BASINS:
AREAL PERCENT OF THE BASIN EXPERIENCING SEVERE OR EXTREME LONG-TERM (PALMER) DROUGHT, AND AREAL PERCENT OF THE BASIN EXPERIENCING SEVERE OR EXTREME LONG-TERM (PALMER) WET CONDITIONS, AS OF APRIL 1996.
RIVER BASIN REGIONS AS DEFINED BY THE U.S. WATER RESOURCES COUNCIL.

RIVER BASIN	% AREA DRY	% AREA WET
MISSOURI BASIN	.0%	27.3%
PACIFIC NORTHWEST BASIN	.0%	57.8%
CALIFORNIA RIVER BASIN	28.8%	.0%
GREAT BASIN	39.8%	18.2%
UPPER COLORADO BASIN	25.0%	.0%
LOWER COLORADO BASIN	100.0%	.0%
RIO GRANDE BASIN	47.2%	.0%
ARKANSAS-WHITE-RED BASIN	11.4%	.0%
TEXAS GULF COAST BASIN	25.3%	.0%
SOURIS-RED-RAINY BASIN	.0%	70.3%
UPPER MISSISSIPPI BASIN	.0%	4.2%
LOWER MISSISSIPPI BASIN	18.4%	.0%
GREAT LAKES BASIN	.0%	16.2%
OHIO RIVER BASIN	.0%	9.4%
TENNESSEE RIVER BASIN	.0%	.0%
NEW ENGLAND BASIN	.0%	7.7%
MID-ATLANTIC BASIN	.0%	11.9%
SOUTH ATLANTIC-GULF BASIN	.0%	10.0%

TABLE 3. EXTREMES, 1961-90 NORMALS, AND 1996 VALUES FOR APRIL. IT SHOULD BE NOTED THAT THE 1996 VALUES WILL CHANGE DUE TO THE USE OF A DENSER STATION NETWORK.

PRECIPITATION (INCHES)

REGION	DRIEST VALUE	DRIEST YEAR	WETTEST VALUE	WETTEST YEAR	NORMAL PCPN	1996 PCPN
NORTHEAST	1.40	1896	6.81	1983	3.42	4.55
EAST NORTH CENTRAL	1.04	1946	4.84	1896	2.63	1.88
CENTRAL	1.55	1915	6.82	1927	3.95	4.91
SOUTHEAST	.85	1986	7.06	1928	3.52	2.96
WEST NORTH CENTRAL	.48	1926	2.83	1984	1.62	.93
SOUTH	1.08	1987	6.92	1957	2.98	2.36
SOUTHWEST	.26	1989	2.58	1900	.83	.28
NORTHWEST	.61	1977	3.81	1937	1.97	2.94
WEST	.14	1909	3.25	1967	1.22	.86
NATIONAL	1.41	1987	3.56	1957	2.38	2.17*

* PRELIMINARY VALUE, CONFIDENCE INTERVAL + OR - .23 INCHES

TEMPERATURE (DEGREES F)

REGION	COLDEST VALUE	COLDEST YEAR	WARMEST VALUE	WARMEST YEAR	NORMAL TEMP	1996 TEMP
NORTHEAST	38.8	1943	50.4	1921	44.4	44.1
EAST NORTH CENTRAL	35.7	1950	51.8	1915	44.0	39.4
CENTRAL	45.4	1907	59.5	1896	53.4	51.1
SOUTHEAST	56.6	1901	66.6	1954	62.1	60.6
WEST NORTH CENTRAL	34.5	1920	49.5	1915	43.0	42.1
SOUTH	57.2	1983	67.4	1925	62.7	61.7
SOUTHWEST	44.4	1920	55.6	1989	49.9	51.4
NORTHWEST	39.7	1975	52.6	1934	44.9	46.5
WEST	43.3	1967	58.5	1934	51.9	54.8
NATIONAL	47.4	1975	55.7	1981	51.7	51.2*

* PRELIMINARY VALUE, CONFIDENCE INTERVAL + OR - .2 DEG. F.

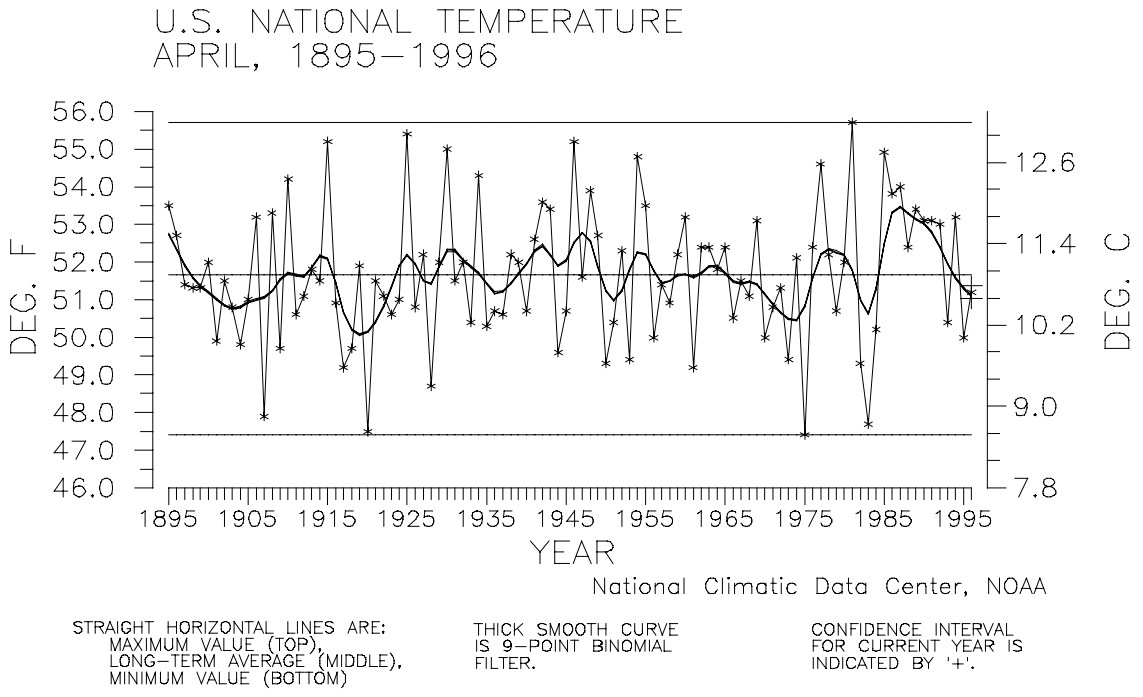

Figure 1

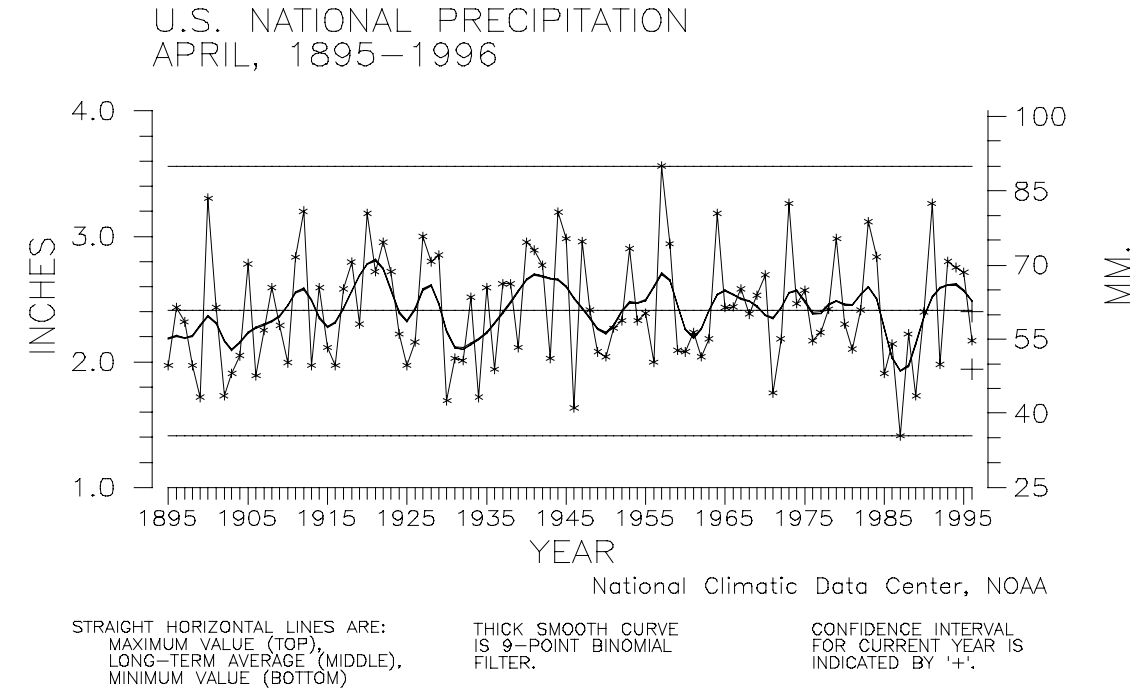

Figure 2

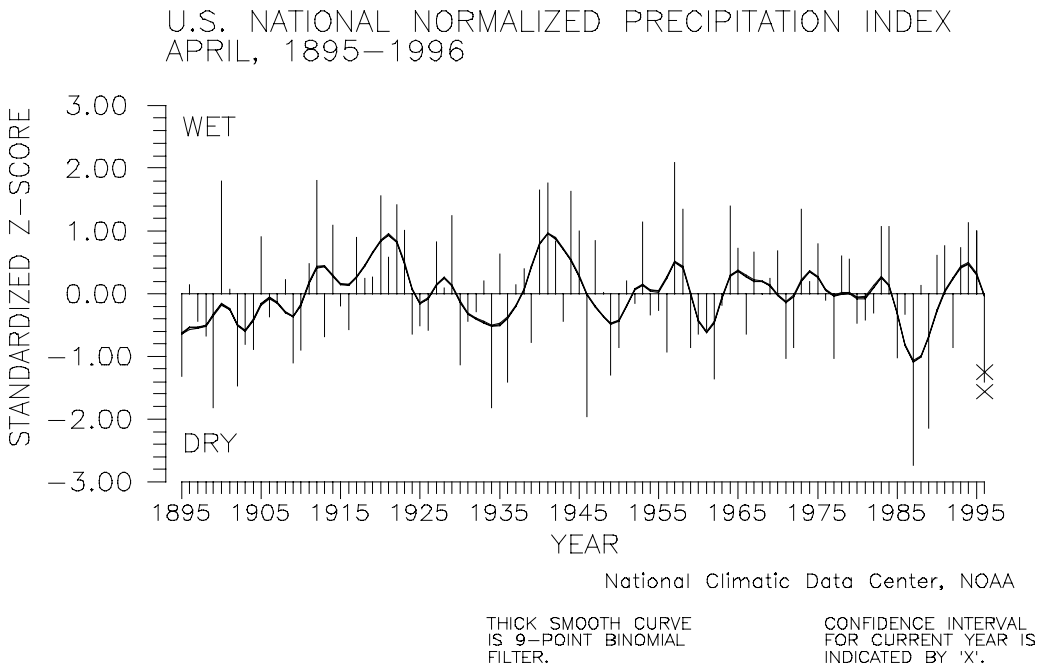

Figure 3

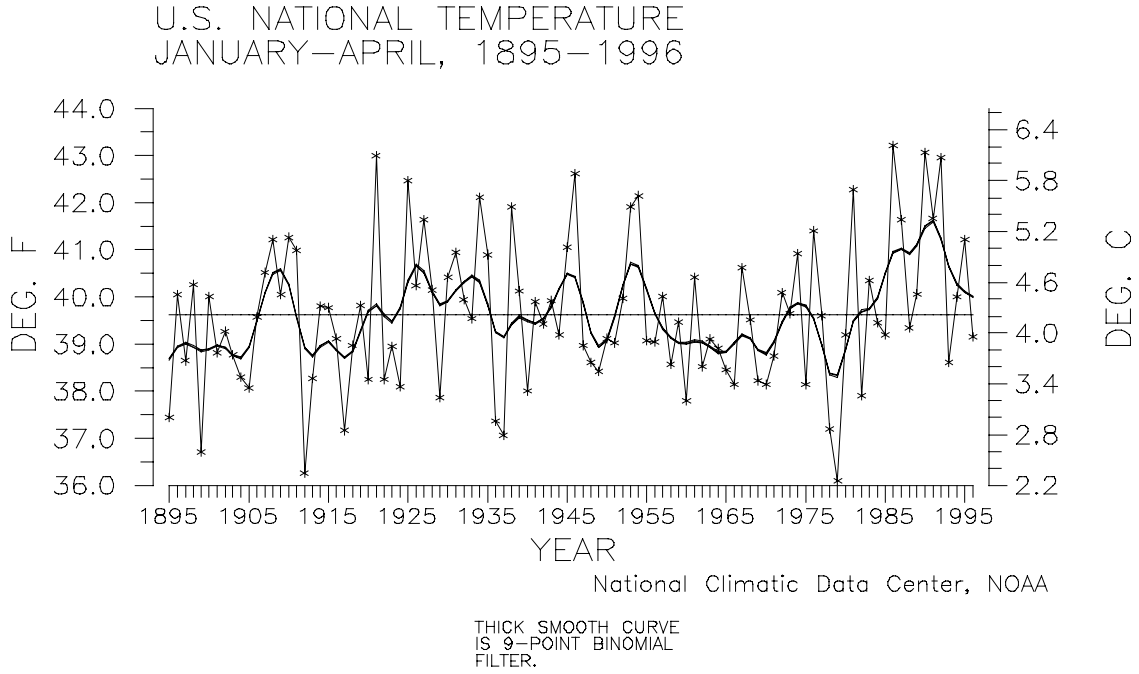

Figure 4

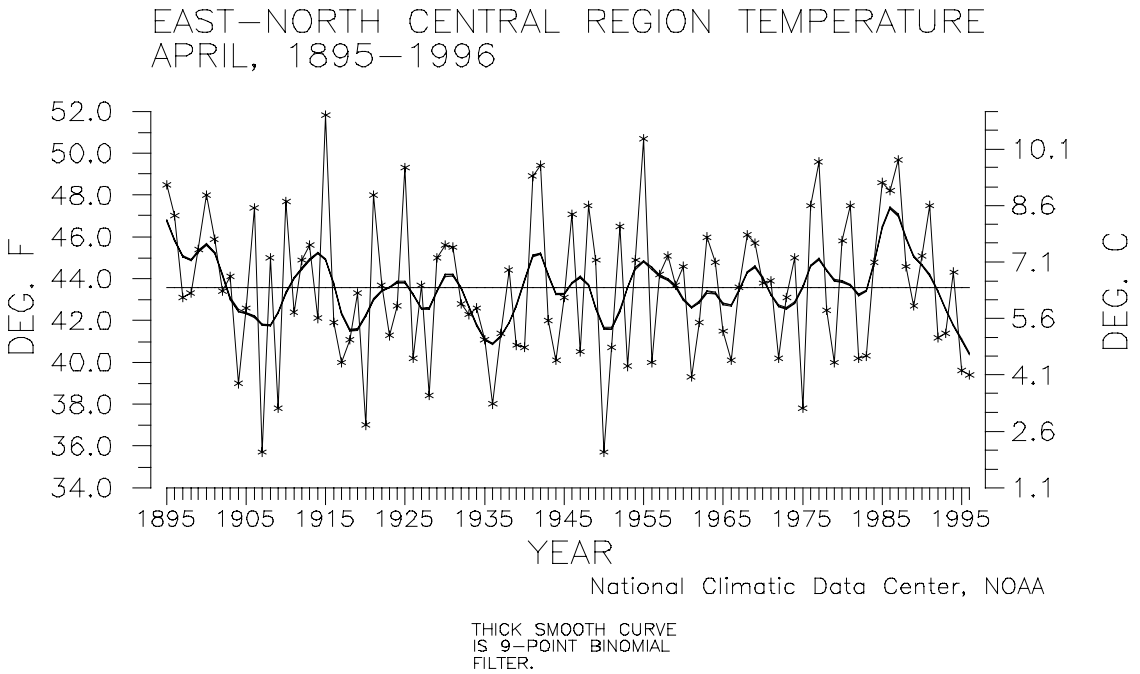

Figure 5

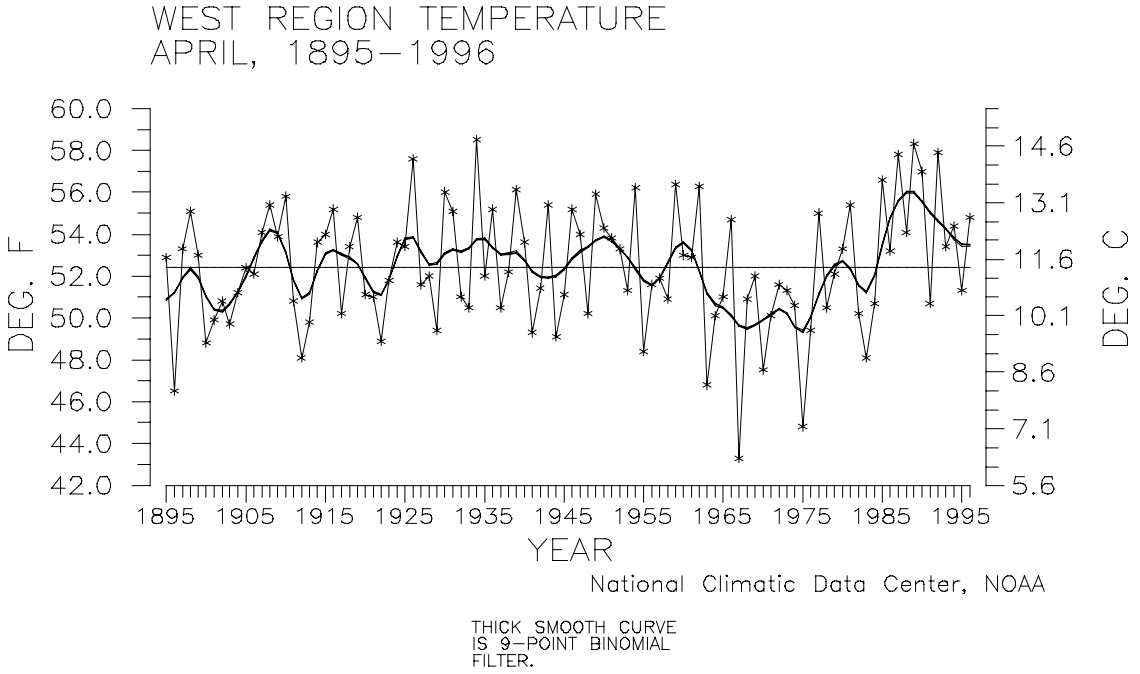

Figure 6

APRIL 1996 STATEWIDE RANKS

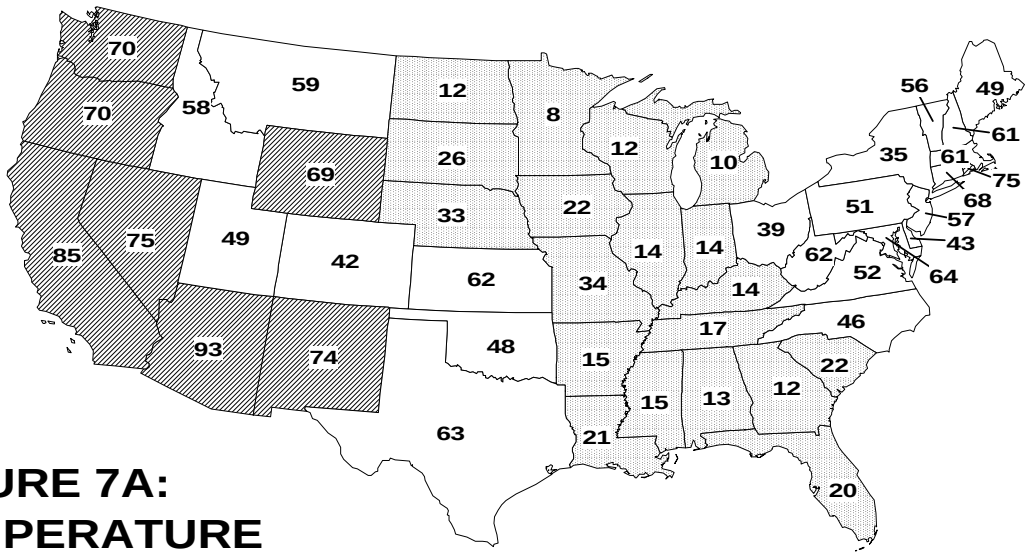

FIGURE 7A: TEMPERATURE

1 = Coldest
102 = Warmest

Temperature Ranks for the contiguous United States. Each state is ranked based on its data from 1895-1996. States having a rank in the warm third or cool third of their historical distribution are shaded.

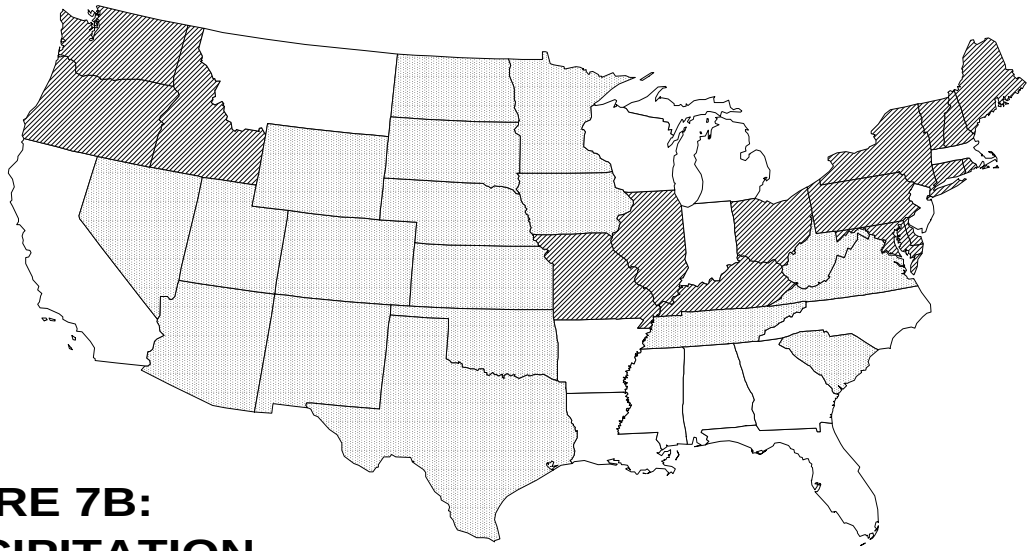

FIGURE 7B: PRECIPITATION

National Climatic Data Center, NOAA

Wet Third
Middle Third
Dry Third

Precipitation Rank Categories for the contiguous United States. Each state is ranked based on its data from 1895-1996. States having a rank in the wet third or dry third of their historical distribution are shaded.

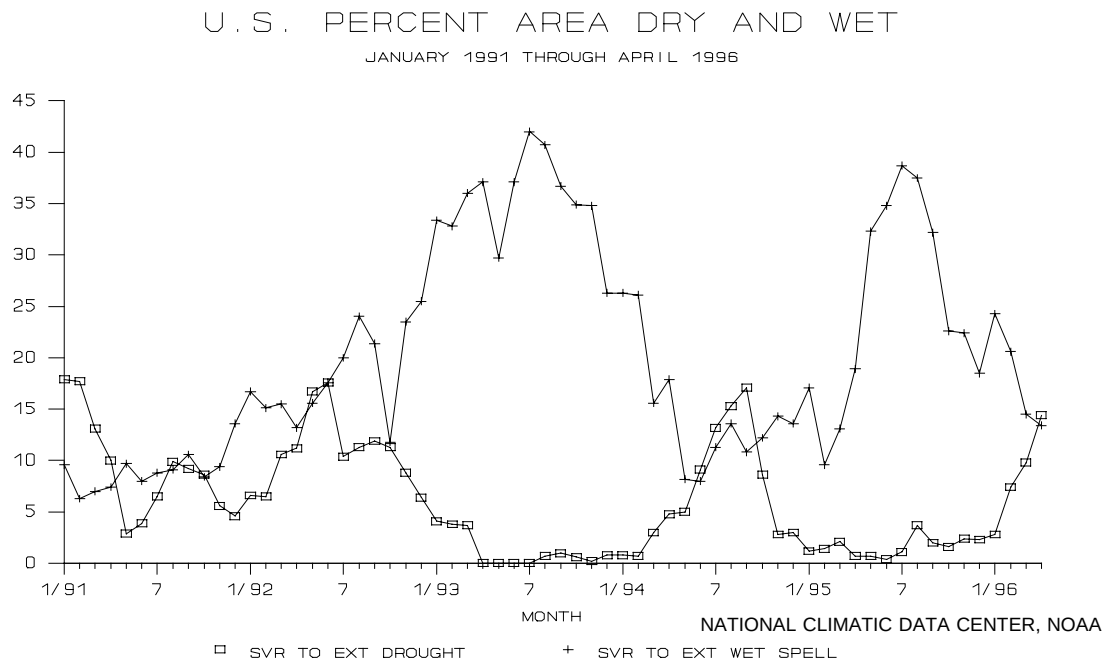

Figure 8

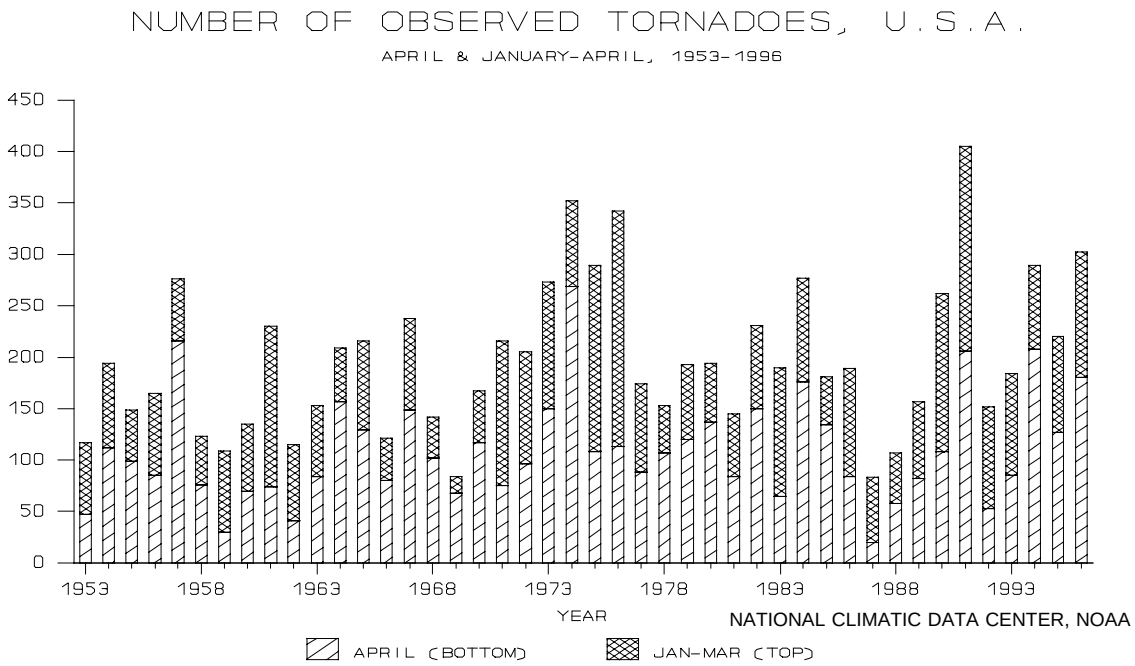

Figure 9